DETAILED ACTION

Acknowledgement of Correction of the Inventorship

1.   In view of the papers filed 06/16/2008, it has been found that this

nonprovisional application, as filed, through error and without deceptive intent,

improperly set forth the inventorship, and accordingly, this application has been

corrected in compliance with 37 CFR 1.48(a). The inventorship of this

application has been changed by deleting Heui Tay An and Young Shin Kang as

co-inventors. The correct inventor is Dong Hwal Lee.

The application will be forwarded to the Office of Initial Patent Examination

(OIPE) for issuance of a corrected filing receipt, and correction of Office records

to reflect the inventorship as corrected.

Claim Objections

2.   Claim 1 is objected to because of the following informalities: The

Examiner suggest amending the claim language to better clarify: replacing

"receiving, at a receiver distanced from the transmitter, the ultrasound signal" to

--receiving the ultrasonic signal, at a receiver located a distance from the

transmitter-- and changing "a distance between" to --the distance between-- .

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3.   The text of those sections of Title 35, U.S. Code not included in this action

can be found in a prior Office action.

4.   Claim 1, 5-8, 11-14 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Hayashi (US Patent Application No. 2004/0021566 A1), and

further in view of Leszczynski (US Patent No. 5,157,639).

Claim 1, 5-8 & 11: Hayashi teaches distance measurement method using

ultrasonic (abstract). Hayashi teaches installing a first receiver for receiving an

ultrasonic at a known position (Figure 17, Element 31a). Hayashi teaches

installing a second receiver for receiving an ultrasonic at an object to be

measured (Figure 17, Element 31b). Hayashi teaches transmitting an ultrasonic

signal having a specific frequency from a location where a distance from the

object will be measured, to the first and second receivers (Page 11, Para 172-

173) and the ultrasonic signal having a specific frequency component maintained

for a predetermined period (Page 9, Para 0140 & 144). Hayashi teaches

receiving, at a receiver distanced from the transmitter (Figure 18, Element 23 &

24). Hayashi teaches extracting specific frequencies of the ultrasonic received

from the first and second receivers to find an arrival time of a first signal and

converting the time into a distance (Page 11, Para 168-169). Hayashi teaches

transmitting error information related to a difference between the distance

received by the first receiver and the known distance to the second receiver; and

allowing the second receiver to correct the velocity of sound using the error

information (Page 11, Para 178-179 & Page 12, Para 0194). Hayashi teaches

analyzing the extracted portion to determine an arrival time of the ultrasonic

signal, using the frequency component and determining a distance between the

transmitter and the receiver, using the arrival time (Page 12, Para 0193 – 0194 &

Page 13, Para 0206-0207). Hayashi fails to teach the specific signal processing,

however, Leszczynski teaches the signal processing as explain in the rejection

above. It would have been obvious to one of ordinary skill in the art to modify the

system of Hayashi to include the signal processing as taught by Leszczynski for

a more precise time of arrival of echoes (Col. 2, Line 55-60). Hayashi teaches a

distance measurement device using ultrasonic (Abstract). Hayashi teaches a

transmitter configured to generate and transmit an ultrasonic having a specific

frequency (Figure 21, Element 23). Hayashi teaches a sensor for configured to

receive the ultrasonic reflected from an object (Figure 21, Element 33). Hayashi

teaches a digital signal processor configured to process the digital data stored in

the memory (Figure 21, Element 32). Hayashi teaches an output unit (Figure 20,

Element 3a) configured to display results processed in the digital signal

processor. Hayashi teaches a numerical input unit configured to inform the

digital signal processor of a processing condition (Figure 20, Element 3a).

Hayashi teaches a communication unit (Figure 20, Element 2) configured to

connect the digital signal processor (Figure 21, Element 32) and an external

apparatus (Figure 20, Element 12) to each other so that the digital signal

processor and the external apparatus can exchange information. Hayashi

teaches a transmission time of a first signal among the received ultrasonic and a

delayed time of the first signal is measured based on the transmission time and

an arrival time of the first signal calculated in the digital signal processor are

measured (Page 12, Para 0193-194). Hayashi fails to teach the details of

amplifying and filtering of the signal, however, Leszczynski teaches the signal

processing as explain in the rejection above. It would have been obvious to one of ordinary skill in the art to modify the system of Hayashi to include the signal processing as taught by Leszczynski for a more precise time of arrival of echoes (Col. 2, Line 55-60).

Claim 10: Hayashi fails to teach the details of amplifying and filtering of the signal, however, Leszczynski teaches amplifying the filtered signal again to generate a re-amplified signal, wherein converting the filtered signal into a digital signal comprises converting the re-amplified signal into a digital signal (Figure 2, Element 100 [amplifier filter]).

Claim 12: Hayashi teaches wherein analyzing the extracted portion comprises determining a starting time of the extracted portion (Page 10, Table 3), and wherein the starting time is indicative of the arrival time of the ultrasonic signal (Page 12, Para 0193 – 0194 & Page 13, Para 0206-0207).

Claim 13: Hayashi teaches wherein determining the distance comprises determining a duration between the arrival time and a transmission time, wherein the transmission time is when the ultrasonic signal is transmitted from the transmitter; and multiplying the duration with a speed of the ultrasonic signal (Page 12, Para 0193 – 0194 & Page 13, Para 0206-0207).

Claim 14: Hayashi teaches wherein the specific frequency component comprises a predetermined waveform repeated in a predetermined number within the extended period of time (Page 9, Para 0140 & 144).

Response to Arguments

5.   Applicant's arguments, see Page 7-8, filed 06/25/2009, with respect to the rejection(s) of claim(s) 1,2 and 9 under 35 U.S.C. § 102(b) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Hayashi (US Patent Application No. 2004/0021566 A1), and further in view of Leszczynski (US Patent No. 5,157,639).

6.   Applicant's arguments filed 06/25/2009 have been fully considered but they are not persuasive. The Applicant submitted arguments based on Leszcynski failing to teach specific features of the claimed subject matter. The Applicant argued that the Examiner had acknowledged that Hayashi had not taught such elements. The Examiner respectfully disagrees. The Examiner acknowledges that the prior Office Action did in fact state that Hayashi did not teach the signal processing and the signal processing elements were considered to be the details of the amplifying and filtering. The Examiner contends that the claimed elements are taught within Hayashi. The Examiner made no statements in regard to what Hayashi did not teach for the structures of transmitting and receiving and other signal processing elements beyond filtering and amplifying. Applicant's arguments that these details are not found in Leszcynski are not sufficient to overcome the rejection, as Hayashi was cited for those features. In fact the prior Office Action made assertions in regard to what signal processing Hayashi did teach. The Examiner has modified the rejection due to the new

claims and the amendments to the claims. The rejection is hereby deemed

proper and is therefor maintained.

Conclusion

7.   Applicant's amendment necessitated the new ground(s) of rejection

presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**.

See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as

set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire

THREE MONTHS from the mailing date of this action. In the event a first reply is

filed within TWO MONTHS of the mailing date of this final action and the advisory

action is not mailed until after the end of the THREE-MONTH shortened statutory

period, then the shortened statutory period will expire on the date the advisory

action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be

calculated from the mailing date of the advisory action. In no event, however, will

the statutory period for reply expire later than SIX MONTHS from the date of this

final action.

Any inquiry concerning this communication or earlier communications from

the examiner should be directed to HELENE BOR whose telephone number is

(571)272-2947. The examiner can normally be reached on M-T 8:30am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the

examiner's supervisor, Long V. Le can be reached on (571)272-0823. The fax

phone number for the organization where this application or proceeding is

assigned is 571-273-8300.

Information regarding the status of an application may be obtained from

the Patent Application Information Retrieval (PAIR) system. Status information

for published applications may be obtained from either Private PAIR or Public

PAIR. Status information for unpublished applications is available through

Private PAIR only. For more information about the PAIR system, see http://pair-

direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-

free). If you would like assistance from a USPTO Customer Service

Representative or access to the automated information system, call 800-786-

9199 (IN USA OR CANADA) or 571-272-1000.

/H. B./   /Eric F Winakur/
Examiner, Art Unit 3768   Primary Examiner, Art Unit 3768